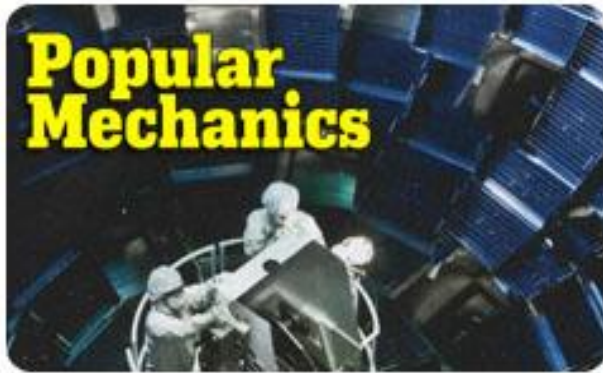


# **LAWRENCE LIVERMORE REPORT**

**A weekly review of scientific and technological achievements from Lawrence Livermore National Laboratory, June 13-17, 2011**

## **NIF gets popular**



**The NIF target chamber.**

Is fusion really right around the corner? According to Lab scientists working at the National Ignition Facility, it could happen as early as next year.

When 192 laser beams zip back and forth, amplifying their strength a quadrillion times and converge on a pencil-eraser sized target in one pulse, a star on Earth will be born.

It happens in 20 billionths of a second when atoms of hydrogen will smash together creating the same energy contained in the sun.

To read more, go to the [Web.](#)

## **One step closer to the island of stability**



### **The elusive island of stability map**

Two new elements (114 and 116) were officially added to the periodic table this month. The elements were discovered years ago by a team of Laboratory and Russian scientists, but they needed approval from an international committee before they could be placed on the famous chart.

The official status gives the scientists who discovered them the right to name the elements.

As the periodic table grows, scientists believe the short-lived elements they have created will eventually become more stable and long-lived as the number of protons in their nuclei increases. In the case of elements 114 and 116, each lasted milliseconds before they fissioned out.

Laboratory scientists say that when elements last longer, they will be on their way to an "island of stability."

To listen to an NPR story about it, go [here](#).

### **Livermore is SWAYed by the wind**



**A schematic drawing of SWAY's deep offshore wind tower and turbine**

Laboratory scientists will test an offshore wind power project -- but not in California.

The Golden State hasn't approved offshore wind turbines, so this test will take place off the coast of Norway.

Livermore is working with Norwegian company SWAY, which launched a 1/5-scale prototype last week to test the technology. The Lab said this type of system could work in the Pacific Ocean, too.

SWAY has a plan to anchor offshore wind turbines in deeper water -- up to 400 meters, or 1,300 feet, deep. This will let turbines be anchored farther from shore, making them less visible to people on land.

The new technology was adapted from deep sea oil drilling. These turbines would sit on top of a floating platform tethered to anchors on the sea floor.

To read more, go to the [Web](#).

## Search for planets and stars out of this world



**The moon rises over Gemini Observatory South on Cerro Pachon, Chile. Image courtesy Gemini Observatory.**

There are a lot of things someone could do in nearly 900 hours. Bruce Macintosh and his team plan to look for things that are out of this world, specifically 600 stars and up to 50 new planets.

Macintosh, a scientist in the Lab's Institute for Geophysics and Planetary Physics, and an international Gemini Planet Imager (GPI) Science Team have won an 890-hour observing campaign to use the GPI instrument to detect and image extra-solar planets.

The Gemini Planet Imager is the next-generation adaptive optics instrument being built for the Gemini Telescope, with an 8-meter diameter mirror located on Cerro Pachon (Chilean Andes) at

an altitude of 9,000 feet. The GPI goal is to image extrasolar planets orbiting nearby stars. LLNL has been building GPI for five years.

The team plans to use GPI I to produce the first-ever robust census of giant planet populations in the 5-50 AU (astronomical unit -- one astronomical unit is approximately the distance from the Earth to the Sun) range from their parent stars. The stars are many light years away from Earth, Macintosh said.

To read more, go to the [Web](#).

-----

LLNL applies and advances science and technology to help ensure national security and global stability. Through multi-disciplinary research and development, with particular expertise in high-energy-density physics, laser science, high-performance computing and science/engineering at the nanometer/subpicosecond scale, LLNL innovations improve security, meet energy and environmental needs and strengthen U.S. economic competitiveness. The Laboratory also partners with other research institutions, universities and industry to bring the full weight of the nation's science and technology community to bear on solving problems of national importance.

To send input to the *Livermore Lab Report*, send [e-mail](#).

The *Livermore Lab Report* [archive](#) is available on the Web.